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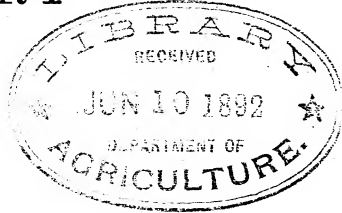
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U. S. DEPARTMENT OF AGRICULTURE.

REPORT

OF



THE POMOLOGIST

FOR

1891.

BY

H. E. VAN DEMAN.

FROM THE REPORT OF THE SECRETARY OF AGRICULTURE FOR 1891.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
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REPORT OF THE POMOLOGIST.

SIR: I have the honor to submit herewith my sixth annual report as Pomologist of this Department.

During the past year two clerks have been added to the force of this division, and Mr. W. A. Taylor, of Michigan, has been appointed assistant pomologist in place of Mr. C. L. Hopkins, of Florida, who resigned on account of ill health. With this increase in the office force it has been possible to enlarge materially the work of this division, but not to keep fully up to the work which is now in progress or to develop new lines which are contemplated. The work of tabulating and preparing for publication the reports of over 5,000 correspondents occupies much time and requires great skill in the subjects treated; but I may be allowed to state that all employees of the division seem specially fitted for their duties in this line, and are willing to do extra work, whenever it is necessary, outside of office hours. I would respectfully urge the necessity of further enlarging the force of this division.

Permit me to urge the need of additional special agents also. During the past year only one has been regularly employed by this division, and three commissioned for periods of from one to six months. For the demands of so important and widespread an industry as fruit-growing, these are far from adequate.

Very respectfully,

H. E. VAN DEMAN,
Pomologist.

Hon. J. M. RUSK,
Secretary.

THE FRUIT CROP OF THE YEAR.

The fruit crop of the year 1891 was remarkably large. Apples have not only been very abundant, but owing to the scarcity last year of fruit in which insects breed, and to the increased use of insecticides and fungicides, they have been unusually free from the depredations of insects and fungous diseases.

Peaches have also been very abundant over nearly the whole of the peach-growing regions. In Connecticut a late frost cut off almost the entire crop when in bloom, and the same thing occurred in some portions of North Carolina, Georgia, and Ohio and in the southern counties of the Chesapeake peninsula, which has long been considered the most important of all the peach-producing sections. Furthermore, in the northern counties of this peninsula the yellows made sad havoc late in the season, when it was thought that a crop of over 8,000,000 bushels was secure. The fruit ripened prematurely, and in many orchards

where thousands of bushels hung on the trees not a peach was gathered. From this district less than 4,000,000 bushels were sent to market. In the famous peach region of Michigan, especially in Berrien, Van Buren, Allegan, Oceana, and Benzie counties, a large crop was gathered, and the yellows did but little damage, owing to the rigid enforcement of a wise State law that requires the destruction by fire of all diseased peach trees as soon as discovered. Where formerly this dread malady ran riot in Berrien County, Mich., there is now rarely a sign of it, and the peach industry is again becoming profitable.

The pear crop was so large in some of the central States that there was barely a market for the supply. In Massachusetts, New York, Pennsylvania, Missouri, and California the crop was heaviest. In the South, where the Le Conte has proven so profitable, the "fire blight" has been making inroads, and there is danger that this variety, which for a time was thought to be exempt from the disease, may yet prove to be equally subject to it with other kinds.

The plum, both the native and the foreign, has also borne well. The variety known as Wild Goose was in every market during the early part of the season, and California soon flooded the East with the large foreign varieties. Kelsey, the largest of the Japanese plums, was noticed on the fruit stands, having been shipped from California and Florida. It may be shipped with little damage, owing to its firm flesh. Specimens from Ocean Springs, Miss., measured 3 inches in diameter. New York had the heaviest plum crop for many years. The States of Washington and Oregon take the lead in the production of plums of large size and excellent flavor. Specimens of 2, and even 3, inches in diameter are not uncommon in the eastern parts of those States.

Grapes have also been abundant; from Maine to Florida and from the Atlantic to the Pacific the crop has, with a few local exceptions, been heavy. The valleys of Utah, Arizona, and New Mexico and the southern parts of Texas and Florida are beginning to produce the same kinds that are grown in California—muscats, Tokays, etc.—and may be expected to compete soon with that State. Western and central New York produced immense quantities of such varieties as the Concord, Worden, Delaware, Niagara, and Catawba. Northern Ohio sent to market a large crop of Catawba, Delaware, and other kinds. Florida is becoming known as being earliest in the grape market, and Texas, Georgia, and the Carolinas next. There is now no gap in the grape market from June until spring, for the later kinds are easily kept all winter in the cold-storage houses. Good grapes have sold at retail in many of the large cities for less than 2 cents per pound.

The orange crop was not so large as was expected, owing to sharp frosts in Florida and California, but there was a liberal supply. The exportation of this fruit to England has begun, and a line of steamers between Jacksonville, Fla., and Liverpool is being established to carry the freight. Mexico, on the other hand, has begun to ship oranges to this country, and our growers may therefore look for competition from this direction.

Another citrus fruit that is becoming quite popular is the pomelo. Hitherto its cultivation has been almost wholly confined to Florida, but California is now trying it. Specimens received from Oroville were of fair quality, but in competition with that produced in Florida this fruit is likely to be at a disadvantage because of its thicker peel and more acid flavor. These objections are sometimes made even to the Florida fruit, though it is very wholesome and, to most persons, of agreeable flavor. The market demand is steadily increasing, and seed-

ling varieties are being named and large orchards of budded trees are being set in Florida. It is to be regretted that the names "grape fruit" and "shaddock" are applied to the pomelo, as they are neither appropriate nor absolutely correct.

Of the small fruits, the strawberry was abundant in all sections, and prices ranged low except for very choice lots. The same is true of the blackberry, raspberry, gooseberry, and currant. In some localities frost, insects, and fungous diseases worked slight damage. The cranberry crop has, on the whole, been quite good, especially in the New England States and in New Jersey, where favorable conditions increased the crop about 17 per cent above that of last year. In the West damaging frosts occurred in the spring, and also in July, August, and September, which caused a decrease from last year's crop of 83 per cent. According to the statement of the American Cranberry Growers' Association, the crop in the United States this year has been 702,250 bushels, against 800,000 last year.

Nut trees of all kinds bore a heavy crop. As a rule, the wild walnuts and hickories bear full crops only on alternate years. Last year there were very few and this year there have been many. Our native nuts are rarely found in cultivation, but the interest in nut culture is growing, and especially in the pecan, which is probably the best of all nuts, either native or foreign, which are found in our markets. The improved varieties of this nut were mentioned in my report of last year. In California there is a lively interest in the culture of the Persian walnut. This nut has often been incorrectly called "English walnut" and "Madeira nut," but recent investigations prove the name "Persian" to be the correct one. All over the country there is a slight interest in the culture of foreign chestnuts, but there is great need of more extensive plantings. Our markets are poorly supplied, and the price is therefore high for these and other nuts which should become a common article of food here as in southern Europe. Already a much larger import trade is carried on than our farmers should permit, and we trust that the tide of trade in nuts will in time be turned the other way, as is now the case with raisins, oranges, and canned fruits.

FRUIT-FARMING IN SOUTHERN MISSOURI.

In the middle of August I had the privilege of personally examining the southern part of Missouri with reference to its capabilities for producing fruit. Special attention was given to the Olden fruit farm in Howell County. The berry crops were all harvested before my arrival, but the fields of thrifty plants and records of market returns gave evidence of a large yield of strawberries, raspberries, and blackberries. I have never seen more healthy and vigorous plants of these fruits. While it is not the purpose of the management to grow berries except as a means of furnishing steady employment to the farm hands, there is a good profit in their culture. A cannery has been built on the farm, and when there was little profit in shipping the fresh fruit to market, which is principally Kansas City, Mo., and Memphis, Tenn., it was canned at home and sent to market as occasion required. The Hopkins has here proved the best of the black raspberries, as it is not only very early but exceedingly productive. Among blackberries the Snyder, Taylor, and Ancient Briton have given better returns at Olden than all others.

A few acres are set to pears, and although the trees are young and

consequently small and the blight had made inroads, there was a fair crop. Bartlett had paid the best.

There are now about 500 acres set to apples, and the trees being only from one to six years old the crop was light, but many of them were loaded with large and handsome fruit. Ben Davis is the favorite market variety, but Jonathan and Minkler are also highly prized.

The chief crop at Olden this year consisted of peaches. At the time of my visit (August 14) about 25,000 bushels had been gathered, and there were about 25,000 bushels yet on the trees. There were nearly 400 acres in bearing. It has rarely been my privilege to see specimens so large and handsome or to taste any so richly flavored as those produced here. The whole crop averaged remarkably high in all these characteristics. There were scarcely any culls or second-grade fruit, owing partly to a thorough thinning when the fruit was about half grown. The quality was also improved by this method. The price obtained was 50 cents per bushel for everything sound and over 1½ inches in diameter, delivered in half-bushel picking-baskets at the packing shed. This practically included the entire crop, for only a few chance seedlings and windfalls were excluded. These and any that were too soft to ship were saved by the cannery, which stands within a few rods of the packing house and near the railway station on the farm. The seeds of such were also saved and the parings fed to the hogs, so that really nothing was lost. Enough picking-baskets were on hand to allow packing to be done directly from them without delay or rehandling. The very early varieties, such as Amsden and Alexander, had been planted in a small way only, and that by mistake, and were not gathered, as they were considered too poor either to send to market or to can.

The St. John was the first to go to market, and Mountain Rose soon followed. Family Favorite was one of the next to ripen, and gave most satisfactory returns. The Mrs. Brett and Susquehanna were handsome and of good quality, but were scant producers and not considered worthy except for amateur cultivation. Elberta was in full bearing during my visit, and in every respect stood about best. It is rather above medium in size, oval in shape, of a rich lemon-yellow, with enough blush to make it showy, and is of most excellent flavor. It bears well and ships well. Altogether, no peach before the public has more good points and scarcely any other is so thoroughly reliable in almost every way. The illustration on Plate I shows a characteristic tree of this variety as grown at this place.

Another of the very profitable varieties is Gold Dust, a yellow cling of medium size, round and regular in shape, and very firm in flesh. The color is very attractive, being dark yellow with a very red cheek. It bears heavily and carries to market with very little damage. Coming as it does before the main peach crop is gathered, it is about the first yellow cling of any special value, and therefore finds a ready sale. Each year it gains in favor, but as it is a variety having but recently originated at Kansas City, Mo., and rarely planted elsewhere than at Olden, the public know little of it. Oldmixon Free and Bonanza are two of the very best of the white and red free-stones, and are largely grown at Olden. Henrietta, Salway, Columbia, and Wilkins were also extensively planted; but, being late, they were not in condition to be examined except as to their productiveness, and in this respect they were up to the standard. Wilkins is a white cling, which is equal to the old favorite Heath cling in quality, and larger, and which after years of trial has practically supplanted that variety. Peach-growing at Olden is cer-



SIX-YEAR-OLD ELBERTA PEACH TREE, OLDEN, MISSOURI, AUGUST, 1891.



STRAWBERRIES PLANTED BETWEEN POTATO ROWS, PORTSMOUTH, VIRGINIA, MAY, 1891.



STRAWBERRY FIELD NEAR NORFOLK, VIRGINIA, PICKING SEASON, MAY 15, 1891.

tainly a success, and other large orchards are being planted in southern Missouri. The main advantages are cheap land that is of sufficient fertility, a climate usually exempt from damaging frosts, cheap, reliable labor, and along the railroads good facilities for sending the crop to market either fresh, evaporated, or canned.

STRAWBERRY CULTURE IN EASTERN VIRGINIA.

There being large interests in strawberry culture in the tide-water section of eastern Virginia, my assistant, Mr. W. A. Taylor, was sent to visit the farms near Norfolk and Portsmouth the second week in May. In most of the strawberry-growing districts of the United States other fruits also are grown for shipment. About Norfolk no other fruit than the strawberry is grown in any quantity, as the climatic and soil conditions are not favorable to general fruit-growing. The principal business is the growing of truck crops; mainly potatoes, cabbage, kale, spinach, etc.

The method of strawberry culture followed here is such as will best fit into a general system of double cropping, where commercial fertilizers are the main dependence of the trucker to keep up the fertility of the soil. The soil of the region is a shallow, sandy loam, underlaid with clay. It was originally covered with a thick growth of small pine. It is naturally warm, moist, and easily drained, though very flat and only a few feet above sea level.

The method followed by most northern strawberry-growers requires the exclusive use of the land for one full year before the first crop of fruit is secured. This requires a considerable outlay for labor in cultivation and hoeing, for which there is no immediate return. In such a climate as that of tide-water Virginia, where winter is but cloudy and rainy weather, interspersed with light snowfall and only occasional frosts, the cost of the cultivation and hoeing necessary for the narrow rows and clean culture of the Northern method is even greater than at the North. Late frosts in spring, which frequently destroy at least the early bloom (owing to distance from market only the early fruit is profitable), would thus cause the loss of the labor and money expended during the previous year and increase the risk in a line of fruit-growing that is at its best quite hazardous.

These causes, in connection with the experience of the truckers in growing and handling other perishable crops to meet the Northern demand for garden products out of season, explain the reason for the development of the system of strawberry culture now followed by leading growers near Norfolk.

THE NORFOLK METHOD.

Strawberry plants are set out in April, in rows midway between the rows of growing potatoes, cabbage, or other truck crops. The rows are commonly 4 to 6 feet apart, with plants 18 to 24 inches apart in the row. The surplus of fertilizer applied to the truck crop is commonly sufficient to give a luxuriant growth of foliage and runners. Plate II shows a field a few weeks after planting. The cultivation and hoeing of the former, if the soil is reasonably free from seeds of noxious weeds, leaves very little labor necessary in the strawberry rows previous to the harvesting of the truck crop. This, in the case of potatoes and cabbage, occurs during May and June. Cultivation of the straw-

berries is then kept up until midsummer, the cultivator being gradually narrowed as the rows widen by the rooting of runners. Runners are never cut off nor torn up, so that by the time cultivation ceases the rows are matted beds of plants and often 4 or 5 feet in width. After cultivation ceases a growth of grass and weeds springs up. This is cut down with the mower and left for a mulch. Sometimes, when it consists of "crab-grass," this is raked off and used for hay, though cleaner fruit is secured by leaving it to cover the ground and prevent the fruit from being beaten into the sand. Early in the spring, before the opening of the blossoms, a dressing of "strawberry guano" containing about 4 per cent of ammonia and 5 to 6 per cent of potash is often applied. This is sowed broadcast and left for the rains to wash into the soil. Spring cultivation is not practiced.

The aim of the grower is to secure early, clean, and firm berries that will stand shipment to distant markets. It is claimed by the growers that the matted row yields earlier and firmer fruit, and the berries are certainly cleaner than those grown by the narrow row or hill system, unless great care is taken in mulching.

Commonly only one crop of berries is taken, the fields being plowed as soon as the berries are off and a crop of corn or millet secured the same season, or else they are fitted for the planting of a fall crop, as kale or cabbage.

VARIETIES.

After a test of all the early ripening varieties, the Hoffman has been selected as the one best suited to the Norfolk and Portsmouth growers. Probably 90 per cent of the entire strawberry acreage of the region in 1891 was planted to this variety. One 80-acre field was visited that contained no other, and in many fields of 20, 40, or 60 acres the same condition exists. Every early berry that is introduced is tested, the two leading new ones fruiting this year being Westbrook and Michel. Neither of these promises to take the place of Hoffman. The chief points of excellence in Hoffman are the earliness, firmness, and good color of its fruit, combined with a vigorous plant, holding the fruit up well on strong trusses. Its defects are poor quality as a dessert fruit and only moderate productiveness.

MARKETING.

When the picking season arrives, men, women, and children, mainly negroes, come from all the country round and from cities as distant as Richmond and Washington. Two cents a quart is the price for picking, and at this rate the pickers earn from 60 cents to \$1.25 per day. Payment is made by means of tickets, which are cashed at stated times. Hand-carriers made with board ends, and with bottom, top, and one side of veneer, the other side being left open for taking out and putting in the quart baskets, are used by the pickers to carry the fruit from the field to the packing shed, located conveniently near. This carrier holds 6 baskets, is light and strong, and protects the picked fruit from sun and light showers, a point often overlooked by Northern berry-growers. Plate III is from a photograph of one portion of an 80-acre field of Hoffman, on the farm of T. R. Ballentine, Norfolk, Va.

The shipping season begins about May 1 and continues till May 15 or 20. Fruit is often found on the plants later than this, but after the early berries are ripe near the Northern cities shipments from Norfolk cease to be profitable. The shipping case in most common use is the "return" crate, with hinge top, holding 60 quart-baskets packed in four

layers. These layers are separated by slat-strengthened veneer division boards that prevent the injuring of the fruit and insure good ventilation. A 32-quart "gift" crate finds favor with some shippers, and the demand for this style of package seems to be increasing.

Transportation, both by water and rail, to Washington, Baltimore, Philadelphia, New York, and Boston is convenient, speedy, and cheap. No attempt is made to cool the fruit in transit. The water rate to New York this season did not exceed 1 cent per quart. Sales varied from 6 to 14 cents per quart wholesale in the Northern cities for the bulk of the crop, and netted the producers about two-thirds of the wholesale price. The average yield per acre, as estimated by leading growers, is about 2,000 quarts, and at the prices obtained this year the strawberry crop is profitable.

The method practiced by the truckers is probably the safest and most profitable one for them, as it lessens the amount of capital invested in an uncertain crop and gives the early and clean fruit needed to secure good prices when Norfolk berries are in the market. A modification of this method may be found profitable in other sections of the country, where the rainfall is sufficient to carry two growing crops during a portion of the season.

SPECIAL INVESTIGATION OF THE KAKI IN GEORGIA AND FLORIDA.

Early in the autumn of 1891 Mr. William R. King, special agent of the Division of Pomology, was directed to visit a number of kaki-growers in Florida and Georgia for the purpose of furthering the effort to settle the nomenclature of the varieties of this valuable fruit. For years past, both in Japan and in this country, the confusion of names applied to this fruit has been a matter of serious annoyance to cultivators, and has greatly interfered with the cultivation of the kaki on a commercial scale. Thousands of trees have been imported from Japan bearing the names of the best established varieties there, but in many instances they have proved almost as variable as seedlings. In some cases it would appear that the Japanese do not discriminate between the original variety and seedlings that closely resemble it; and this is particularly noticeable in the varieties named Yemon and Zengi, two of the most common in cultivation. In fact, the experience of the past six years, during which this division has been studying the varieties of the kaki, leads us to believe that the only way to render the nomenclature satisfactory is for our nurserymen and principal growers to unite with us in a persistent effort to carefully study and sift the whole subject, and to propagate only from trees which have fruited on their own grounds and have been positively identified by the Pomologist, or by others who have given this subject special attention.

In this connection, also, it must be noted that, in the Southern States at least, the kaki is much more thrifty and vigorous on seedlings of the wild persimmon (*Diospyros Virginiana*) than upon Japanese roots. An erroneous impression on this point obtains with many, owing to the practice of certain nurserymen of using old field root-sprouts for stocks, in apparent ignorance of the fact that they are less thrifty and productive than seedlings, besides being predisposed to harbor the eggs and larvæ of the root-sawyer, which is one of the principal enemies of the persimmon. Methods of propagation vary widely, although the general practice is to graft just at the surface of the ground and draw earth high

up over the juncture. Mr. J. R. McIrvin, of Gainesville, Fla., who has been very successful as a propagator, prefers to dig up, root-graft, and callus, almost precisely as in root-grafting the apple, while in central and southern Florida dormant budding is the favorite method.

As a direct result of the past season's investigation, we can recommend for general market purposes in Florida and eastern Georgia the following varieties: Tane Nashi and Yemon, described and figured in my annual report for 1887; Hyakume and Yedo Ichi, described and figured in my annual report for 1889; and Kurokuma, as grown by J. R. McIrvin, Gainesville, Fla., and P. J. Berckmans, Augusta, Ga. This fruit is yet comparatively little known in the markets. The dark-fleshed varieties, Hyakume and Yedo Ichi, promise best, being thrifty and prolific, good shippers, and entirely without astringency even when unripe, a point which should weigh much with growers until the consumer is educated to allow the kaki to become perfectly ripe and soft before eating. Tane Nashi is perhaps destined to be the leading variety, being exceedingly prolific, the fruit seedless, regular in shape, and of large size, and the tree of excellent habit and quite hardy, especially where not cultivated too highly; but until better known it should not be planted too freely.

The range of successful cultivation in the Gulf States is now fairly defined for the varieties positively identified, extending from Key West, where at least one tree is growing thriftily, to Augusta, Ga., and into the Carolinas near the coast. As far south as Manatee, Fla., it succeeds admirably on native stock, and is cultivated as a special fruit all through central Florida; but in the northern belt of counties, beginning with the extreme limit of orange culture, it is most at home, although trees have been injured by frost where an early season has induced too free growth. At Waycross, Ga., the tree is apparently as hardy as at Lawtey, Fla., but in the vicinity of Quitman, Thomasville, and Smithville, in southwest Georgia, hardly a tree is now left standing, after many years' trial; while at the nurseries of P. J. Berckmans, near Augusta, Ga., the kaki has proved perfectly hardy, possibly owing to intelligent care and the high gravelly location, far above the Savannah River.

It may be said that our growers and the Department are now practically united on the identity of the following varieties: Hachiya, Tane Nashi, Yemon, Hyakume, Yedo Ichi, Tsuru, Zengi, Kurokuma, Yamatsuru, and Dai-dai. Hachiya, though a superb variety in fruit, is unfortunately a very shy bearer, and Yama-tsuru (syn. Yamato) yields a small fruit and is apt to greatly overbear. Zengi is so small as to be of little value, except for home use, but its flavor is superior.

It may be proper to describe and illustrate here two varieties which, after several years of careful study of numerous specimens, have been quite fully identified and understood. Including those mentioned in my former reports, beginning with 1887, eleven named varieties of the kaki have been described and illustrated, but there are others as to the identity of which I am yet in doubt. So much care has been taken in arriving at conclusions that it is quite certain the varieties so far described are properly named. If further investigations should prove that no mistake has been made it would be a matter of congratulation, since even among persons having the most information on this difficult subject, both in this country and in Japan, there has been the greatest diversity of opinion with reference to the matter.

Dai-Dai.—Size of fruit, medium to large, averaging nearly 3 inches in diameter; shape, round with but little depression at the base, a slight cavity at the apex; sur-



DAI DAI.





YORK IMPERIAL.

face, smooth and quite free from dark specks or cracks; rather pale orange in color; flesh, orange-red, soft when fully ripe; seeds, plump, usually present; flavor, rich, sweet; quality, very good. As to the meaning of the name there is difference of opinion among the Japanese, some saying that it means "Big-Big," and others that it has reference to the resemblance of the fruit in shape and color to an orange. The illustration on Plate IV was made from a specimen from Florida.

Yama-Tsuru.—Size, small to medium, from $1\frac{1}{2}$ by 2 to 2 by 3 inches in diameter; shape, oblong, distinctly pointed and peculiarly inclined, one side being larger than the other; stem set on a slight elevation or cone, instead of a cavity, as with most kinds; surface smooth, little or no dark marks; color, bright red; flesh, deep orange, rarely any dark flecks; flavor, very sweet; quality, very good. The name means mountain or wild crane—*yama* meaning mountain, or, literally interpreted, wild, and *tsuru*, the stork or crane. A Japanese pomologist says it is perhaps the wild progenitor of the larger and more improved variety called *Tsuru*. The illustration on Plate V was made from specimens selected from a number received from Florida.

SEEDS, PLANTS, AND SCIONS DISTRIBUTED.

This branch of the work of this division is prosecuted with as much energy as the very limited appropriation will permit. There being no money at command with which to purchase seeds, plants, or scions of fruits, about all that can be done is to secure donations, and I am happy to state that many generous persons do all that they can in this direction.

KAKI.

Fifteen varieties were received from the minister of agriculture of Japan. These had been collected with great care, and, in accordance with our request, from different parts of the empire. Some of them have not been previously imported to this country and are said to be among the hardiest varieties known in Japan. Others were standard varieties which are already growing here. There were two trees of each of the following kinds:

Saijio (Si'-zhō), which is the name of a town in the province of Aki. It is said that the fruit is large, oblong, pointed, bright red, and commonly used for drying.

Tsuno-Magari (Tsu'-nō-Mä'-gä'-ry), *tsuno* meaning horn, and *magari* curved; the name therefore signifies curved or crooked horn.

Zenji (Zēn'-gy). *Zenji* is the name of a county in the State of Shimuzuki. This variety was described in my annual report for 1890.

Wase-Hira (Wä'-sy-Hee'-rā). *Wase* means early, and *hira* flat. This variety is said to resemble *Zenji* in form. Its size is rather small.

Kuro-Kuma (Koo'-ro-Koo'-mä). *Kuro* means black, and *kuma* bear. This is a variety belonging to the cold region of Japan. The fruit is said to be large and of very excellent quality.

Shimo-Maru (Shee'-mō-Mä'-roo). *Shimo* means frost, and *maru* round, the name being descriptive of the variety, which is able to endure frost, and bears fruit round in shape.

Daijyo-in (Dī'-zhō-in). *Daijyo* is the name of a temple in the State of Kaga. This is astringent until fully ripe, which is not until after frost.

Hassaku (Häs'-säc'-oo). This word has reference to the time of year corresponding to August 1, the time for women to celebrate worship to the "god of work."

Tsuru-no-ko (Tsoo'-roo-nō-kō), meaning the young of the crane. This variety is described in my report for 1890.

Hachiya (Hä'-chee'-yā). This name is that of a county in the State of Mino. The variety is described in my report for 1887.

Yemon (A-mōn). This word is the name of a badge that is worn on the outside of clothing. The variety is described in my report for 1887.

Uza-yemon (Oo'-zä-ä-mōn). *Uza* being the name of the man who originated a variety closely resembling *Yemon*, or perhaps from its seed. It is said to be astringent until frosted.

Hiyakume (Hyä'-koo-mäy). This is one of the most common varieties in Japan, and will be found described in my report for 1889. There is a difference of opinion among Japanese as to the meaning of this name, some saying that it has reference to the fruit weighing 100 "me," which is a unit of Japanese weight; and others that

it means 100 eyes, referring to the abundant and peculiar eye-like marks near the apex of the fruit.

Yedo-Ichi (Yēd'-ō-Itch-y). This is another popular variety that has also been described in my report for 1889. The translation of the name is Yedo's Best.

Tane-Nashi (Tā'-ny-Nāsh'-y), *Tane* meaning seeds, and *Nashi* without; the name therefore signifies seedless, which is usually the case with the fruit. This is one of the best varieties in cultivation and is described in my report for 1887.

These trees were made into two sets, comprising one tree of each kind, one set being sent to the director of the Florida Experiment Station, at Lake City, and the other to R. D. Hoyt, of Seven Oaks, Fla., to be propagated in both cases, so that the young trees may be distributed. It is hoped that some of these varieties will prove hardy enough to endure the winters of the more northern States, but it was thought best to have the original trees all set south of the line of danger from winter-killing, and to test the young trees afterwards in the North.

CITRON.

In response to a special request, there were received from the United States consul at Bastia, on the island of Corsica, ten rooted cuttings, which were said to be of the choicest variety of the citron cultivated there. No name was given in the accompanying communication, and, for the sake of convenience, I labeled them "Corsican" when sent out. Three plants each were sent to T. T. Eyre, of Myers, Fla., and Mr. Frank A. Kimball, of National City, Cal., and two each to Mr. R. D. Hoyt, Seven Oaks, Fla., and the State experiment station at Pomona, Cal.

DATE.

From the United States consul at Muscat, Arabia, there were received six plants of the Fard date, which had been especially ordered. These were rooted suckers and came through in excellent condition, having been planted in tubs of earth. One each was sent as follows: To the State experiment station, at Phoenix, Ariz.; H. W. Blaisdell, at Yuma, Ariz.; agent Southern Pacific Company, at Indio, Cal.; Frank A. Kimball, National City, Cal.; and to the State experiment stations at Pomona and Tulare, Cal.

MISCELLANEOUS.

Scions of thirty-nine varieties of the apple were collected from correspondents in different parts of the country. Nearly all of these varieties were entirely new. The scions were distributed to localities in which it was thought they would best succeed. Eleven varieties of the pear were collected and distributed, all of them being new and some of them as yet unnamed. Also, four varieties of the plum (*Prunus Americana*) namely, Charles Downing, Hawkeye, Ocheeta, and Piper; twelve varieties of the strawberry, nearly all of which have been received and sent out under restrictions from the originators not to allow them to be placed upon the market, but only to be tested; five varieties of the gooseberry, all of which are as yet held for trial; two new seedling varieties of the dewberry, Skagit Chief and Washington Belle, both of which are as yet untested, except in the State of Washington, where they originated; and besides the above, seeds, cuttings, and plants of a few other fruits, including nuts, which it is unnecessary to enumerate.

FRUITS RECEIVED FOR EXAMINATION AND IDENTIFICATION.

From the organization of this division in 1886 there has been a steady increase in the appreciation by the public of its work in endeavoring to identify varieties of fruits for correspondents and to pass unbiased judgment upon new kinds. In my former reports mention has been made of this fact, but there has been such a marked increase of this work in the last year that at times to promptly examine the specimens and answer the accompanying communications has overtaxed our facilities. Over 3,000 separate varieties have been received at this office during the year. A careful record has been made of each, and one or more letters written to the sender. Many valuable new varieties, not known except perhaps on the farm where they originated, have been discovered and steps taken to have them tested in different parts of the country. In some cases old varieties, thought by correspondents to be new, have been identified and their reintroduction under new names, with resulting confusion, has been prevented. In other cases the naming and introduction of new seedlings have been discouraged because of their poor qualities. As the fruit lists are now already very large, it is deemed unwise to add new kinds unless decidedly better than others of the same season. I am happy to say that, with few exceptions, persons sending such have, after a little argument, acquiesced in the judgment of this office.

Very full descriptions and drawings have been made of about 500 varieties, and accurate models of about 300.

Among the most promising of the newer varieties are the following, of which only brief descriptions can be given in the limited space devoted to this report. It is hoped that this may lead to their more general trial.

APPLES.

York Imperial.—This notable winter apple, though not new in some sections, is deemed of so much value for both market and family use and adapted to so large a territory as to deserve special mention. The variety originated at York, Pa., and was brought to public notice in 1855, but only before small local associations. In 1871 it received from the American Pomological Society very high commendations for cultivation in Pennsylvania, Virginia, and Maryland. Since then it has been grown in nearly all the apple sections of the country with remarkable success. It is one of the most popular kinds grown for market in the States above mentioned, and is often called in Virginia by the synonym Johnson's Fine Winter. For several years I have noted its good behavior in the orchards of Kansas and Missouri. In Illinois and Indiana it does well, and also in California, where a few trees have been planted. There is not a market apple now known which is more worthy of being planted. The tree is vigorous and well shaped, forming a round head and being an abundant bearer, although not too productive. One objection to it is the peculiar oblique form of the fruit, which makes it difficult to pare on a machine. It may be described as follows: Fruit, in size medium to large; form, round or oblong, diameters nearly equal, angular, oblique; surface, smooth, sometimes having russet patches; color, yellow, with indistinct red stripes over a lighter shaded red; basin, deep, wide, abrupt, regular, or slightly plaited; eye, nearly closed; cavity, deep, narrow, russeted; stem, short; core, small, closed; seeds, numerous, small, plump; flesh, yellow, firm, juicy, a little coarse; flavor pleasant, subacid; quality, good to very good; season, December to spring in the central States. An illustration of a typical specimen will be found on Plate vi.

Avista (A. J. Phillips, West Salem, Wis.).—An oblate conical apple of medium size, fairly good appearance, and mild, subacid flavor; noted for its hardness and constant bearing qualities, having borne twenty-three consecutive crops; season, winter.

Alden (same source).—An apple medium to large in size, conical, of good appearance; hardy and productive in the Northwest; quality, scarcely good; season, winter.

Bradford's Best (T. V. Munson, Denison, Tex.).—A medium sized, globular, dull-red apple; flesh yellow, fine grained, juicy; of very good quality and a long keeper.

Lehigh Greening (W. B. K. Johnson, Allentown, Pa.).—A large green apple of good quality, and apparently a better keeper than Rhode Island Greening.

Kochers (same source).—A large globular apple, yellow-striped and splashed with crimson; flesh, yellow, fine-grained; sprightly subacid; quality, very good; season, winter.

Dudley (Prof. W. M. Munson, Orono, Me.).—A seedling of Oldenberg, similar to it in size, color, and quality, but a winter apple.

Gordon's Cluster (J. W. Kerr, Denton, Md.).—Of medium size, globular in form, red, with stripes of darker red; very good quality for an early apple (received August 4), and a profuse bearer.

Palouse (George Ruedy, of Colfax, Wash.).—A beautiful winter apple, above medium size; oblong conical; finely striped and of very good quality; season, early winter.

Early Breakfast (Uriah Thomas, Iola, Kans.).—A large handsome summer apple of best quality. This variety should be well tested.

Cross (F. M. Benham, Hagerstown, Md.).—A large oblate apple; greenish-yellow, striped with light red; ripening at same season as Twenty Ounce, to which it is superior.

Fay's Gem (S. Gordon, Seargeantsville, N. J.).—A crab apple, best quality.

Rebel (C. R. Wood, Washington, Va.).—A medium-sized, oblate, high-colored apple of fine dessert quality.

Worszt, No. 451 Russian catalogue (J. H. Masters, Nebraska City, Nebr.).—This large handsome Russian variety is one of the best of its class that has been received at this office; fruit, oblong, truncated, with deep cavity and basin; color, greenish-white, well covered with rich carmine stripes; quality, good; season, August in Nebraska.

Shining Aromatic, No. 973 Russian catalogue (same source).—Another handsome apple of medium size, pentangular in shape; color, pale yellow, faintly shaded with light red; quality, only good; season, August in Nebraska.

Raspberry, No. 288 Russian catalogue (same source).—An oblong medium-sized apple of delicate light red color and medium quality; season, 1st of August in Nebraska.

Rambour Queen, No. 502 Russian catalogue (same source).—An oblong irregular fruit of large size, yellow, splashed and striped with crimson; flavor, pleasant; quality, good; season, August and September in Nebraska.

Oro (J. J. Blackwell, Titusville, N. J.).—Oblate, medium size; yellow-striped and splashed with bright carmine; flesh, yellow, fine-grained, juicy; flavor, mild, subacid, rich; quality, very good; season, early winter in New Jersey.

Malinda (John S. Harris, La Crescent, Minn.).—An oblong conic apple of medium size; greenish-yellow, bronzed on one side; flesh, white, fine-grained; quality, good; season, early winter in Minnesota; reported as a very hardy tree and a constant bearer after it attains age; should be top-worked on early-bearing varieties.

Lilly of Kent (A. N. Brown, Wyoming, Del.).—Large, globular, green with light shading of yellow and bronze; flesh, greenish-yellow, fine-grained, juicy; flavor, mild subacid; quality, very good; apparently an all-winter keeper.

Lankford (Charles Wright, Seaford, Del.).—A large oblong variety; pale green, shaded with pale and dark red; flesh, greenish-yellow, fine-grained, juicy, sprightly, subacid; quality, very good; a long keeper.

Dickey (A. D. Kline, South Salem, Ohio).—A flat apple of medium size; yellow, shaded and splashed with red stripes; flesh, yellow, fine-grained, melting; flavor, rich subacid; quality, nearly best; season, winter; a good and regular bearer.

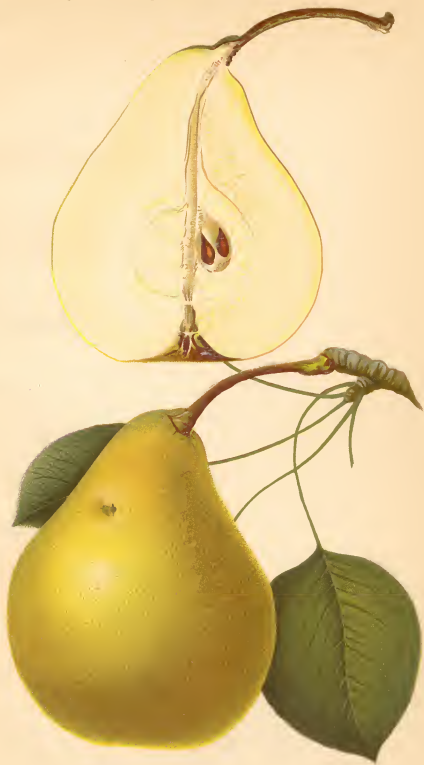
Blaine (E. F. Smith, Gresham, Oregon).—Oblong in shape, of medium size; golden yellow, almost entirely covered with stripes of light and dark carmine; flesh, white, with light stain, fine-grained, breaking; quality, good, fine for dessert; season, winter.

Seedling No. 1 (G. H. Horne, M. D., Latham, Ark.).—A large oblong cylindrical apple; very smooth and of a rich yellow transparent color; flesh, yellow, crisp, juicy; flavor, pleasant subacid, with a delightful aroma; quality, best; tree, a fine grower and an early bearer.

PEARS.

Vermont (J. T. Macomber, Adams, Vt.).—A small fruit, pyriform in shape; color, light yellow with very bright carmine blush; flesh, white with but little granulation; flavor, subacid, pleasant; quality, good; season, September.

Gans (Elbert W. Ryan, Mount Airy, Ohio).—Shape, pyriform, regular; size, $2\frac{1}{2}$ to 3 inches in diameter; color, yellow, with slight brownish cheek on the sunny side; surface, smooth; stem, $1\frac{1}{2}$ inches long, slender, set in a slight depression, and usually curved and inclined to one side; basin, shallow, broad, regular; calyx, open; flesh,



GANS.



CROSBY



BURBANK.

free from grain, tender, melting, juicy; core, small; flavor, rich, sugary, very good. Does not rot at the core. Mr. Ryan gives the following history of the variety: In 1871 Mr. Joseph Gans (pronounced Ganz) found the tree growing in the woods near his farm, in the vicinity of Cheviot, Ohio. He removed it before bearing age to his own farm. When it bore, the fruit was found to be very desirable, and Mr. Jackson, a nurseryman, showed it before the Cincinnati Horticultural Society, where it was named Gans. The old tree is from 6 to 7 inches in diameter and 25 feet high, and of a handsome conical shape; the twigs are heavy and of upright habit, and the tree bears abundantly. The present owner this year sold 5 bushels at \$2.20 per bushel, when the best Bartlettts were only bringing \$1.50. Its season, judging from the specimens received here, is from the first to the middle of August in southern Ohio. Plate VII shows an average specimen.

QUINCES.

Flavoring (Luther Burbank, Santa Rosa, Cal.).—A large pyriform, turbinate fruit; golden yellow; flesh, white; good quality, very highly flavored.

Van Deman (same source).—Oval truncate; size, large; color, greenish-yellow; flesh, yellow; flavor, subacid, mild; quality, best. This variety is one of the very best in every respect that I have ever examined, and the tree is reported as exceedingly thrifty and productive. After several years' trial Mr. Burbank considers it the best of his hundreds of new seedlings, and has named it as above.

Santa Rosa (same source).—Another very choice new quince. It is very highly colored and has the peculiar quince flavor strongly developed, and yet can be eaten raw like an apple. Free from fuzziness.

Johnson (W. B. K. Johnson, Allentown, Pa.).—Large, handsome, similar to orange.

PEACHES.

Lucia (Wallace Foster, Indianapolis, Ind.).—A large globular fruit; yellow-shaded with rich purple red; flesh, a rich yellow, with red next the stone; flavor, mild subacid, almost sweet; quality, best; clingstone; season, last of September.

Albright (H. M. Engle & Son, Marietta, Pa.).—A large ovate fruit; greenish-white, splashed and washed with red; flesh, white, melting, moderately juicy; vinous sweet; quality, good; freestone; season, middle September.

Lancaster (same source).—Medium size, round; color, yellow washed with red; flesh, reddish yellow, melting, juicy, rich; of superior quality; freestone; season, middle August.

Michigan (C. Engle, Paw Paw, Mich.).—A large round fruit; yellow shaded with dark red; flesh, yellow; subacid with slight bitter deposit around the stone; quality, very good; freestone; season, first September.

Crosby (W. J. Hinds, Townsend, Mass.).—Size, medium, about 2 inches; shape, round or oblate, sometimes being compressed towards the apex; cavity, medium; suture, moderately deep and extending from the base to beyond the apex, often causing the tip to be sunken; color, bright yellow with crimson splashes and stripes, very attractive; skin, moderately thick with short pubescence; flesh, bright yellow, red at the stone, juicy; stone small, blunt, parting readily from the flesh; flavor, mild subacid, rich; quality, above medium; season, the last week in September in Massachusetts, ripening just before Crawford Late. The tree is described as low, spreading, and willowy, resembling Smock, Hill's Chili, and Wager, and is not a strong grower. The leaf is of medium size, thick, grayish-green, with prominent reniform glands. The blossom is small, and of a dark pink color. This peach was sent out about 1876 by Mr. Crosby, a nurseryman of Billerica, Mass. It was afterwards propagated and distributed in a small way by the Massachusetts Agricultural College, and has been locally known as Excelsior. The fact that there is another variety already on the list named Prince's Excelsior made a change of name necessary, and, the matter having been referred to this division, the name Crosby was finally selected, in honor of the originator. This peach comes with the statement that in northern Massachusetts and New Hampshire it has fruited for ten consecutive years, though standard varieties have in that time borne only two or three crops. Prof. S. T. Maynard, of the Massachusetts Agricultural College, thinks the fruit much like Wager, but as it has fruited several years when the latter variety entirely failed, it would seem that the varieties are certainly not identical. In fact, the principal point in its favor above other varieties is the unusual hardness of the fruit buds. The tree bears abundantly and the fruit is quite even in size, although not large. Mr. J. H. Hale says: "I believe for the North it has a Concord-Bartlett-Baldwin combination that must make it a very valuable commercial variety." The colored illustration, Plate VIII, was made from specimens of average size; they were grown by Mr. W. J. Hinds, of Townsend, Middlesex County, Mass.

Dumont (W. G. Voorheis, South Frankfort, Mich.).—A medium-sized fruit; dark

yellow, nearly red; flesh, of red orange color, melting, vinous, pleasant; quality, very good; freestone; season, last of September.

Roberta (W. J. Cowing, Washington, D. C.).—Medium size, round; color, reddish yellow washed with dark red; flesh, reddish yellow; flavor, rich, sugary, vinous; quality, superior; freestone; season, first to middle of August.

Hughes I. X. L. (L. T. Sanders, Plain Dealing, La.).—A medium-sized fruit; color, greenish-yellow, mottled and striped with deep crimson; flesh, lemon yellow; flavor, mild subacid; quality, medium; clingstone; season, last of October in Louisiana; may be profitable in the South.

Olden (J. C. Evans, Olden, Mo.).—A large roundish fruit; color, creamy yellow shaded with red; flesh, white, very melting, juicy; quality, very good; freestone; season, first half of September in southern Missouri.

"*Gold Dust*" (same source).—A medium-sized roundish fruit; yellow washed and splashed with light to very dark red; flesh, very rich yellow, juicy; flavor, sprightly, rich; quality, very good; cling; season, last of August.

Phillips (J. T. Bogue, Marysville, Cal.).—A large round fruit; color, a rich lemon yellow shaded lightly with red; flesh, yellow, firm, meaty, juicy; flavor, mild subacid; quality, nearly best; cling; season, first half September.

McDevit (same source).—A large round fruit; color, a fine lemon-yellow, striped, shaded, and clouded with red; flesh, yellow, firm, juicy, rich; flavor, almost sweet; quality, best; cling; season, first half September.

Washington (J. W. Kerr, Denton, Md.).—A medium round fruit; color, greenish yellow shaded with beautiful red; flesh, lemon yellow, very melting, juicy; sprightly, subacid; quality, best; freestone; season, first half September.

Kerr's Cling No. 1 (same source).—A large ovate, pointed fruit; color, light yellow washed and shaded with red; flesh, yellow, firm; flavor, vinous; quality, good; cling; season, first half of September in Ohio.

Champion (I. G. Hubbard, Nokomis, Ill.).—A large globular fruit; color, creamy white, washed and striped with red; flesh, white, slightly pink at stone, melting, juicy, firm; vinous; quality, good; season, last half of August.

PLUMS.

Burbank (Luther Burbank, Santa Rosa, Cal., and S. D. Willard, Geneva, N. Y.).—Fruit, of medium size; form, roundish, conical, tapering towards the end opposite the stem; cavity, regular, deep, abrupt, with peculiar leather-crack marks; suture, scarcely perceptible; stem, stout, half-inch long; apex, a mere point; surface, smooth, with very little bloom; cracks and dots of brown sometimes apparent; color, dark red or purplish, running into bright amber, with the yellow undercolor showing through in patches; dots, numerous, minute, brown; skin, of medium thickness, tender, peeling easily from fully ripened specimens; flesh, amber yellow, melting, juicy; stone, small to medium, pointed, clinging to flesh; flavor, rich, sugary, resembling other Japanese plums; quality, best. This variety was imported from Japan by Mr. Burbank, December 20, 1885, among a lot of seedlings; but, as it proved upon coming to fruiting age to be superior to many of the named kinds, he sent specimens to this office in 1887, and it was named in this division in honor of the introducer. The fruit carries remarkably well and the tree appears to be entirely hardy, at least as far north as Geneva, N. Y., where it has fruited this year. It is also a very good producer. I think it deserves extensive trial, as persons who have already tested it are contemplating planting it largely for market. The specimens shown in Plate IX were received from Mr. S. D. Willard, of New York.

Longworth (J. W. Van Deman, Geneva, Mich.).—A medium-sized oval fruit; color, reddish purple; flesh, amber yellow, breaking; sweet, pleasant; quality, good; resembles Lombard, except that it is a freestone; season, first half September in northern Michigan.

Columbia (S. H. Feathers, Damascus, Oregon).—This fine plum, while not a new one, has not been as widely disseminated as it deserves; fruit, large, roundish; color, brownish purple; flesh, yellow orange, transparent, melting, juicy; flavor, sweet, rich; quality, best; season, first half September.

Rockford (C. G. Patton, Charles City, Iowa).—A small roundish fruit of the *P. Americana* type; color, dark carmine red; flesh, dark yellow, very melting; flavor, sweet, aromatic; quality, best; season, September; nearly a freestone.

Champion and *Van Deman* (H. A. Terry, Crescent City, Iowa).—Seedlings of Hawkeye of good size; very productive, of good quality, and fine for market.

Wild No. 3 (Agnes M. Johnson, Laurel, S. Dak.).—A small round fruit of dull-red color; flesh, yellow, rich, pulpy; excellent; skin, quite tender; season, September.

A wild plum of *P. Americana* type (Royal Church, Harrisonville, Ohio).—This plum was grown by J. B. Holt, of Rutland, Ohio, and is the largest specimen of native plum received at this office. Round, truncate in form; color, yellow shaded and

spotted with coppery red; flesh, yellow, melting, juicy; mild subacid; quality, very good; clingstone; season, first half September.

A branch thickly set with choice fruit, showing beneficent result of arsenical spraying, was received from William Smith, of Carmi, Ill.

GRAPES.

Delawba (L. C. Chisholm, Spring Hill, Tenn.).—A seedling of Delaware and Catawba; cluster, compact, cylindrical, slightly shouldered; color, brownish amber with delicate lilac bloom; pulp, moderately firm; flavor, sweet.

Superb (A. F. Rice, Griswoldville, Ga.).—Bunch, large to very large; cluster, shouldered and much divided at base, terminating in a very slender tip; many berries abortive; berry, round, medium, black with blue bloom; skin, medium thick, very tough; pulp, firm, so that berry is hard even when ripe; pulp readily dissolves; rich, juicy, sweet; no bitterness or acidity; quality, excellent.

Magnificent (same source).—Bunch, medium to large, rather short; broad shouldered, not compact; berry, medium to large, dark red with purplish bloom; skin, thin, tender; pulp, tender, melting, no bitterness; juice, plentiful, rich, sweet; quality, excellent; a promising table grape.

Dr. Warder (Theophile Huber, Illinois City, Ill.).—An early black grape of best quality, a week or more earlier than Concord.

Marie Louise (same source).—A white grape of most exquisite flavor and well worthy of trial.

From T. V. Munson, Denison, Tex.—Twenty-two varieties of new hybrids, many of which are of great interest. Some are crosses with new species of our American wild grapes which have not yet been brought into cultivation. The importance of the origination of such varieties as these can scarcely be overestimated.

From T. T. Lyon, South Haven, Mich.—Specimens of fifty varieties, many of them being new.

STRAWBERRIES.

Lida (*imp.*) (Prof. L. R. Taft, Agricultural College, Mich.).—A medium-sized berry, conical, dark crimson and glossy, with seeds regularly arranged in broad depressions; flesh, dark, rather tender, sweet and melting, not aromatic; productive, with fruit on strong trusses.

Alabama (Julius Schnadelbach, Grand Bay, Ala.).—Medium size, long, conical, smooth, and regular, with seeds very slightly depressed; crimson, with dark seeds; firm enough for market; subacid.

Stevens (same source).—Medium size, round conical, blunt, calyx large; crimson, with yellow seeds; subacid; very firm; an early variety.

Dr. Morain (Jules Fonta, New Orleans, La.).—Imported from France; berry, large, long pointed, slightly ribbed; rather light in color and soft in texture, but of excellent flavor; promising for home use and near market.

Salter (Edmund Gookin, Ponchatoula, La.).—Medium-sized, conic, dull crimson, with depressed seeds; rather sour, and lacks firmness, but is grown for shipment to Northern markets.

Strickland, (*imp.*) (same source).—Large, oblong conic, scarlet, with large dark seeds; rather sour; foliage, very dark and glossy, free from rust; later than Salter; grown for shipment North.

Estelle (A. H. Smith, Paw Paw, Mich.).—Round, conical, light crimson, with dark seeds; quality, good, but rather soft.

Michigan (same source).—Much like Bubach in form, but darker in color and firmer in flesh; large, rather rough, with depressed calyx; flavor, subacid, pleasant. Both *Estelle* and *Michigan* are seedlings originated with C. Engle, Paw Paw, Mich.

Fairmount (Oakley Apgar, Califon, N. J.).—Long conical, regular, rather seedy; flesh, firm, dark, juicy, subacid, pleasant; very good color and texture for market; firm enough for long shipment.

Lovett (Prof. T. L. Brunk, College Park, Md.).—Medium size, round, irregular, sometimes truncated, compressed and grooved; calyx large, often doubled, bright green, and depressed; color, light crimson; seeds, large; firm, but juicy, sprightly subacid; promising as an early market berry.

Enhance (Henry Young, Ada, Ohio).—A large, sharp conical berry, the first berries to ripen being inclined to be rough; bright crimson with slight gloss; flesh, dark, firm, and of good flavor when fully ripe; promises well for market.

Farnsworth (Charles A. Green, Rochester, N. Y.).—A medium-sized, round conical berry of excellent quality, but too light in color and not firm enough for market; promising for home use.

Lehigh (*imp.*) (W. B. K. Johnson, Allentown, Pa.).—A berry that very closely resembles Crescent, but is claimed to bloom a week later and to ripen its fruit several days later than that variety. It is worth testing by growers of the Crescent.

RASPBERRIES.

Kansas (A. H. Griesa, Lawrence, Kans.).—Originated on the farm of Mr. Griesa, in 1884, as a chance seedling. Although he had growing at that time several hundred other young seedlings from carefully selected seeds, this proved better than any of them. It is an early black cap, somewhat resembling Gregg, but the fruit is larger and of better color, being almost free from bloom. Although juicy and excellent in flavor, it is firm enough to ship well, as specimens received at this office from Kansas, along with other varieties, abundantly proves. The illustration on Plate x was made from specimens received from the originator this year, and does not represent the variety above its average in size, some berries being much larger. The plant seems to have not only unusual vigor, but to withstand the trying climate of Kansas and other States where raspberry culture is carried on with difficulty. It has been thoroughly tested in many parts of the country, along with other new varieties as well as old ones, and is, almost without exception, very favorably mentioned. A noticeable feature is the extreme readiness with which the plant makes tips. They often root so early in the season as to send up little canes before the growth stops in the fall, and of course the plantlets are well rooted, and when transplanted start off with vigor the next spring.

Seedling No. 4 (same source).—Round; drupes closely set; black, with heavy bloom; clusters, large; quality, good; late.

Hiram (W. J. Bradt, North Hannibal, N. Y.).—A very large, sharp conical berry; color, pale crimson, with a light bloom; not so firm as Cuthbert, but a fair shipper, and of good quality.

Extra Late (same source).—A large, heavy fruit; flattish round; of fair quality; having no bloom; a better-looking berry than Gregg, which ripens a little later.

Royal Church (Royal Church, Harrisonville, Ohio).—Fruit, large, round, crimson; drupes, large; core, rather large, holding berry better than Shaffer; flavor, rich and good.

Perfection (G. J. Kellogg & Sons, Janesville, Wis.).—Originated by F. W. Loudon; said to be a cross between Cuthbert and Turner; berry, large, roundish, elongated; drupes, large, showing suture; dark crimson, with bloom; rather soft and juicy, though tart; a handsome berry, and apparently very productive, though not so firm as Cuthbert.

Japanese Raspberry (*Rubus phoenicolasius*), syn. Japanese wineberry (H. R. Miles, Harper's Ferry, W. Va.).—Berry, round, drupes small; deep red, glossy; seeds, small, smooth, easily crushed; a handsome berry, of medium size, and fairly firm; flavor, subacid, somewhat sprightly, pleasant. More ornamental than useful.

BLACKBERRY.

Eldorado (E. M. Buechly, Greenville, Ohio).—A medium to large blackberry of excellent quality; fruit, oblong, conical, irregular, with very large drupes, and small seeds and core.

A thornless blackberry (John I. Sterling, Benton Harbor, Mich.).—Early, and of fair size and quality. The long fruit stems and general habit suggest an infusion of *R. Canadensis* in this variety. The old canes are thornless. There are a few scattering thorns on the under side of the leaves. Worth testing by market growers.

GOOSEBERRIES.

Oregon Champion (Dr. A. W. Thornton, West Ferndale, Wash.).—A large, oval, bright green berry, showing the tomentum of the English varieties; quality, fair, not equal to Downing. Specimens of this variety were also received from John Boerstler, Vashon, Wash., with bearing wood, which is stocky, and of a light gray color, with long thorns.

Bennet's Eureka (same source).—A large, obovate or pear-shaped berry, of a dull green color; flavor, rather a sharp acid.

Cedar Hill (same source).—A large oval berry, with long adherent flower parts and a few scattering prickles; skin, thin; pulp, quite rich. Dr. Thornton writes of this (which originated with him): "An upright grower, of good size, very prolific, as much so as Champion or Houghton; perfectly mildew proof" [in Washington].

A lot of seedling gooseberries (Phil Strubler, Naperville, Ill.).—These were numbered consecutively 1 to 10, inclusive; Nos. 1 to 5 are early to medium, and Nos. 6 to 10, late. They are said by Mr. Strubler to be seedlings of Downing, Smith, and Mountain. Nos. 1, 2, and 4, seem to be pure American, and are promising early varieties. Nos. 6, 7, and 10 resemble Mountain, but are larger, earlier, and of better flavor.



KANSAS



GUAVA.

1. Mexican (*Psidium lucidum*)
2. West Indian (*Psidium Guava*)
3. Cuttley (*Psidium Cattleianum*)

Puyallup Mammoth, Triumph, and Randolph (same source), grown on bushes received from the introducers in Washington, Pennsylvania, and Missouri, are apparently identical and of English parentage.

Portage (A. H. House, Mantua Station, Ohio).—A large, round or slightly oblong berry; yellowish-green with light yellow veins, thin pubescence, and scattering prickles; skin, rather tough and thick; pulp, rather acid; a good cooking berry.

Pearl (J. F. Taylor, Douglas, Mich.).—Originated by Prof. William Saunders, Ontario, Canada; round, medium size, very light green, transparent, with a bloom and no pubescence; very productive, and of excellent quality.

CURRANTS.

Improved Long Bunch Holland (George P. Pepper, Pewaukee, Wis.).—Leaf closely resembles Long B. Holland, but racemes are much longer and berries larger; berries, very uniform in size.

London Market (Henry Bowles, Belknap, Mich.).—"An English variety imported in 1878;" racemes of moderate length, thickly set with large, light crimson berries; somewhat resembles Fay, but is more delicate in texture; firm, transparent, rather sharp acid, and seeds large and numerous.

Baldwin's Black (same source).—An English importation; apparently an improvement on Black Naples, in size, productiveness, and length of cluster; otherwise identical.

BUFFALO-BERRY.

Specimens of buffalo-berry (*Shepherdia argentea*) were received from Agnes M. Johnson, Laurel, S. Dak. It is a very promising wild fruit, perfectly hardy in the cold climate of the North and Northwest.

PERSIMMON.

Alton.—A promising new persimmon (*Diospyros Virginiana*) was received from E. A. Riehl, Alton, Ill., of good size, rich yellow in color, very sweet, and of excellent quality; fruit reported as selling in Chicago market at \$6 per bushel. This fruit ripened without frost.

DATES.

Fruit from a tree grown from seeds distributed by the Department of Agriculture about 1877, from George N. Hitchcock, San Diego, Cal.

Specimens of three seedlings, from F. T. Eisen, Fresno, Cal.

A cluster of seedling dates of good quality, from W. C. Maloney, Key West, Fla.

NUTS.

Milford (O. C. Cook, Milford, Mass.).—A hickory nut of medium size, easily cracked, and separating from the shell nearly entire. Kernel of best quality. A variety of the little shellbark, *Hicoria alba*. Should be thoroughly tested by grafting.

Shinar (Samuel C. Moon, Morrisville, Pa.).—Another little shellbark hickory nut of superior quality. The kernel is very tender and rich in flavor, and is easily extracted from the shell; worthy of propagation.

Leaming (R. J. Leaming, of Sedalia, Mo.).—A little shellbark hickory that has a shell opening, when cracked, in such a way as to expose both halves of the kernel, allowing them to be extracted whole; of the best quality.

Jewett (W. R. Stuart, Ocean Springs, Miss.).—A large thin-shelled pecan, somewhat angular, and compressed near the center of most specimens; the kernel separates easily from the shell and leaves no astringent particles attached.

San Saba (E. Risien, San Saba, Tex.).—A medium-sized pecan, of excellent quality, thin shell; very little spongy growth on kernel; flavor excellent.

Post (Herbert Post, Fort Worth, Tex.).—A large pecan, of rather thin shell; opens fairly well, and of good quality.

Faust (O. D. Faust, Bamberg, S. C.).—A pecan of large size; very long in shape; quite thin shell; kernel separating readily from shell; quality, best.

THE GUAVA.

Among the tropical fruits this is one of the most common and popular even among the most careless and ignorant. Some call it the "peach of Florida." There are about fifty botanical species, and all, perhaps

with one exception, are native of the tropical regions of the American continent, and are not found in any other part of the world except where introduced by man. None are found wild within the United States except as chance seedlings which have escaped from cultivation. Seeds are abundant in all species and germinate very freely. They are about the size and shape of those of the tomato, and the internal structure of the fruit resembles that vegetable. The flavor is quite peculiar and pronounced, and at first not always liked. To the taste the fruit is a pleasant acid. The crop usually ripens in the late summer, although some varieties bear fruit during the entire year. All kinds are said to grow from cuttings. The three following-named species have been quite well established in Florida, and to some extent in California:

Psidium guava ("common guava," "apple guava," "pear guava;" Plate XI, Fig. 2).—This species is a native of the West Indies, and is so very tender that even the slightest frost seriously injures or kills back the trees. If killed to the ground the stocks send up numerous sprouts which soon bear fruit. It propagates naturally by sprouting from the roots for many feet in all directions from the parent tree, and this habit is sometimes quite annoying. The size and form of the tree are somewhat like the peach, and it bears abundantly. The leaves are from 4 to 6 inches in length by 2 inches in width, and not glossy. There are numerous varieties of this species, the fruits of which differ slightly in form, size, and color. Usually, however, they are from 2 to 3 inches in diameter, of an oval shape, and pale lemon-yellow in color. The names "pear" guava and "apple" guava come from their resemblance in form to these fruits. The surface is smooth but not glossy. The flesh is either pink or whitish yellow in color. The peculiar odor is so strong that a few specimens will perfume a large room, but the taste is a pleasant subacid. The guava jelly, which is known the world over as one of the most delicious of all preserves, is made chiefly from this species. However, jelly of excellent quality can be made from any species of this genus. The fruit is also eaten fresh with sugar and cream, or preserved and canned as are other fruits.

P. Cattleyanum ("strawberry guava").—This is a native of Brazil, and a much more hardy species than the former, as it will endure a slight frost without serious injury. It takes the form of a bush from 3 to 6 feet high, and is a most profuse bearer. The leaves are very much smaller than those of the former-named species, and of a different shape, as is shown by the illustration (Plate XI, Fig. 3). They are also quite different in texture, being thick and glossy. The fruit is small, rarely exceeding $1\frac{1}{4}$ inches in diameter, and pyriform, with the apex at the blossom end. In color it is a rather dull red, with numerous brown dots on the slightly roughened and not glossy surface. The flavor is pleasant though decidedly acid, somewhat resembling the strawberry, and free from the strong odor of *P. guava*. There is little variation in the fruit of its seedlings.

P. lucidum ("Mexican guava," Plate XI, Fig. 1).—This species, in Florida improperly called "yellow cattley guava," has been less cultivated than the others, but is of no less importance. It is more a shrub than a tree, and is quite as hardy as *P. Cattleyanum*. The leaves are small, thick, and shiny. The fruit is borne in abundance, and is from 1 to 2 inches in diameter, according to variety. The shape is nearly round, and the color is pale lemon-yellow. The surface is smooth and free from dots. In flavor it is quite tart, and has but little of the peculiar guava smell.

MEETING OF THE AMERICAN POMOLOGICAL SOCIETY.

The twenty-third biennial session of the American Pomological Society was held in Washington in September, in response to the following invitation:

U. S. DEPARTMENT OF AGRICULTURE,
OFFICE OF THE SECRETARY,
WASHINGTON, D. C., January 16, 1891.

Mr. P. J. Berckmans, President American Pomological Society:

DEAR SIR: Allow me, through you, to invite the American Pomological Society to hold its next biennial meeting, which I am informed is to take place in September, at the Agricultural Department, in the city of Washington.

The Department will, I assure you, be happy to arrange for the meeting, and provide a suitable hall and such other conveniences as you may require, should you honor us with your presence.

Yours very truly,

J. M. RUSK,
Secretary.

This invitation was promptly accepted by the executive committee of the society, and the meeting was held September 22-25, in the lecture hall of the National Museum.

This society has numbered among its members the foremost pomologists of the country, and many important advances in the improvement of our fruits have been placed on record at its biennial meetings. Its reports on the nomenclature and value of varieties are everywhere regarded by fruit-growers as the highest authority on those subjects. Through its published reports and fruit catalogues it has done more to condense and make available to the general public the existing information on methods of culture and adaptation of varieties to particular localities, etc., than any other single agency. The fruit catalogue of this society is as yet the only reliable compilation of varieties that applies to the various fruit-growing regions, and its wider circulation among farmers and fruit-growers would do much toward preventing the annual waste of thousands of dollars' worth of fruit trees and plants put out every year by planters who have not sufficient knowledge of the varieties adapted to their localities.

The attendance at the meeting was good. Most of the States east of the Mississippi and many west of it, including California, were represented. The program of essays and addresses included papers on a wide range of topics, arranged under three general heads, viz, scientific pomology, commercial pomology, and miscellaneous papers on pomological topics. While limited space will not permit more than a mere mention of many of the papers, brief references to some of them may not be out of place in this report.

At the opening session, after the call to order by President Berckmans, the address of welcome was delivered by Hon. Edwin Willits, Assistant Secretary of Agriculture. He referred briefly to the remarkable advances made in the improvement of our fruits since the organization of the society, in 1848. At that time California and Florida were unknown as fruit-producing regions. The orange, the lemon, the fig, the Japanese persimmon, the pomegranate, the pine-apple, the olive, were essentially luxuries, imported from foreign shores. The tomato, though tempting to the eye was, in many localities distasteful to the palate, if not positively injurious. The strawberry was yet, in a large measure, only a product of the meadows.

"But it is useless," he added, "to enlarge in illustration of the condition at the date of your organization. A complete revolution has

been wrought. In this revolution you, gentlemen, and those whom you succeed and whom you represent have been an important factor. The improved methods you have brought about; the new varieties you have propagated and introduced; the new fruits you have brought from foreign lands and made popular; the assiduity with which you have studied soil, and climate, and adaptability; the genius you have shown in discovering and devising new strains of flavor and of increased production; the sacrifices you have made and the fortunes you have spent in the endeavor to secure a hardy stock with the most acceptable qualities, all have been recorded, and will be gratefully remembered by generations who enjoy the luscious pleasures you have brought to their repasts. Many of your names have been household words for years. You have given joys that never satiate and sweets that never pall. Where before an improved fruit was so rare that it was a benefaction, now there is such an abundance that one can hardly discriminate and can hardly distribute his appreciation." The speaker then referred at some length to the work of the Department of Agriculture in lines affecting pomology, and invited the hearty coöperation of the society, that still better work might be accomplished.

In response to a request from the president, Hon. C. L. Watrous, of Des Moines, Iowa, thanked the Secretary of Agriculture for the kind invitation and cordial reception tendered the society. He referred to the successful work of the Department and to the feeling of assurance on the part of the society that the work would be continued. He expressed it as his opinion, based on observation of the different plans adopted by various governments, for promoting the interests of agriculture, that in no other country has a government department devoted itself so successfully to securing the welfare of the common people. Referring to the work of members of the society from beyond the Mississippi, he spoke of recent attempts to perfect and develop the hardy wild fruits of the West and the prospect of success in that line of pomological work.

In the address of the president, Mr. P. J. Berckmans, attention was called to the fact that the official recognition of the society by the Secretary of Agriculture gave it "as truly a national standard in name as it has always had in deeds."

One of the objects of the society is to educate the people concerning fruits. Though not so stated in the constitutional clause defining their duties, much of this work devolves upon the vice-presidents for the various States. The biennial meetings of the society are not sufficient to accomplish its work. The progress of pomology will largely depend upon the personal efforts of the vice-presidents and members in the several States. By personal intercourse and correspondence, the fruit-growers of the various counties and localities should be aroused to the importance of organizing and supporting State, county, and local societies. These can hold more frequent meetings, and by discussion and comparison the merits and demerits of fruits may be ascertained. Annual reports to the State society, of which these local societies should be auxiliaries, would enable the chairmen of the State fruit committees to make more reliable reports than can be obtained where State and local societies do not exist.

Though the society was founded to advance the interests of the science of pomology and can not recognize individual interests, the wonderful advance in the production of fruits makes it necessary that commercial fruit-growing shall receive due attention. Commercial fruit-growing as it now exists is in a measure the result of the scientific work of this society.

Discussing the causes of recent decline in the prices of fruit, President Berckmans said that in many cases they are local, and therefore general remedial measures can not be suggested. He mentioned the following as among these causes:

- (1) Overproduction in some localities.
- (2) Irregularity in transportation, which prevents daily shipments and causes an accumulation of the ripe fruit for several days.
- (3) The shipment of larger quantities to a market than it can consume.
- (4) Inferior quality or faulty packing, which prevents ready sale and decreases the price of similar fruit of a better grade.

The remedies suggested were the adoption of rules by local societies concerning the grades of fruit to be shipped; the appointment of inspectors, if necessary, to inspect the fruit before shipment; and the packing and shipment under the official brand of the society, indicating the name and grade of the fruit in each package.

Fungous diseases and injurious insects are increasing in some sections with alarming rapidity. In combating these the fruit-grower must call in the aid of the scientist. He should, however, acquire all possible knowledge of entomology and kindred sciences to enable him to intelligently observe the appearance and effects of these enemies, that he may aid in the work of investigation, the results of which, thanks to the Government, are placed within the reach of all.

Concerning the fruit catalogue and its revision Pres. Berckmans said:

The aim of the official catalogue of the society is to present a list of fruits that have proved of value in the largest area of the States in which they are now rated. This catalogue was begun twenty years ago and has received most careful revision at each biennial session, but it is to-day not giving as much information as is necessary. This is because of the difficulty of so dividing our immense territory as to show the geographical and climatic regions wherein many of our popular fruits become modified to a greater or lesser extent and their value greatly changed. Several plans were suggested when the work was at its inception; and that of dividing into subdistricts such States as included regions of great difference in climate, elevation, etc., was carefully considered. This latter plan would have been adopted but for the voluminous tabulation necessary to show the rating of the fruits for the various sections. The present form was considered to be the best one then practicable. While insufficient in some instances, it has been retained until a better plan is suggested. This is a matter which I suggest for your consideration.

The labors of the committee on synonyms have been made more arduous by the introduction of well-known sorts under new names and by the addition of other names to those of new varieties held under a registered trade-mark, in order to disseminate them without liability of legal proceedings. The originator of a new and valuable fruit should receive a just remuneration for the years of care and labor required for its production. But by applying for a "trade-mark" or "registered label" he does not always retain a monopoly of the variety. This arises from the utter impossibility of indelibly impressing such a mark upon anything but an inert manufactured article. The "registered-label" plan induces fraud and adds to the confusion of our nomenclature. There are doubtless other methods to secure remuneration to the originator of a new fruit which would be more effectual.

The various Japanese fruits imported by California firms are adding a most confusing and perplexing nomenclature. Local names, usually without significance, or misspelled because of the difficulty of writing in English characters sounds which to any but Japanese ears are mere murmurs, have increased this perplexity. Many new Japanese fruits have proved of great value in several sections of the United States, but the difficulty in arriving at a correct nomenclature has caused inferior sorts to be cultivated and entailed failure, when better sorts offered under similar names would have yielded abundant returns. This subject, I trust, will meet your careful consideration during the session.

SCIENTIFIC POMOLOGY.

In a Paper on "The Possibilities of Originating a Class of Pear Trees Exempt from Blight," Prof. T. J. Burrill, of Illinois, stated that in his opinion such a class of trees can be developed. He mentioned Tyson,

Seckel, and Angouleme as varieties comparatively free from blight, and advocated the growing of seedlings from them in order to secure blight-proof pear trees which will furnish fruit of good quality.

Mr. E. F. Smith presented tables showing results of a three years' test of various fertilizers that have been recommended as preventives of peach yellows. His conclusion is that a practical test on a large scale, covering a period of three years, and in one of the best possible localities for such a test, has shown that chemical fertilizers (including the mixture recommended by Goessman and Penhallow) are practically worthless as a remedy for peach yellows, and has also shown that they have no efficacy even as a preventive.

Prof. B. T. Galloway briefly outlined the methods pursued in investigating plant diseases and the results accomplished during the past few years. He described the approved forms of apparatus for applying the fungicides used to prevent pear leaf-blight and apple scab, and emphasized the importance of the subject to the fruit-grower. He estimated the damage to the apple crop in 1890, by scab alone, to be \$6,000,000, and said that the total damage to the fruit crop of the country by such diseases as blight, mildew, leaf-blight, rot, and yellows is not less than \$50,000,000 annually. In the investigations "a great many difficulties have been encountered, and while some have been overcome, others remain to be mastered."

Dr. C. V. Riley presented an instructive paper on "Recent Advances in Dealing with Insects Affecting Fruits." In this he discussed the methods of combating the plum curculio, codling-moth, red scale, fluted scale, and other injurious insects, giving the result of recent experiments on those insects. Contrary to the expressed opinions of many horticulturists, Dr. Riley questions whether more injury is done to-day to our fruits than was done fifty or one hundred years ago. In fact, it is patent that with the advances made of late years in our methods of warfare against these fruit pests less injury relatively is done, but as the area of fruit culture increases, so does the aggregate of injury and also the number of species that we have to contend with. He warned pomologists to be on their guard against two foreign insects likely soon to appear in this country—the peach ceratitis, a subtropical insect resembling the apple-maggot, which is extremely destructive to the peach crop of Bermuda and likely to be troublesome if it once becomes established in Florida and Georgia, and the Japanese peach fruit worm, which is allied to our codling-moth, and in some seasons damages 90 per cent of the peach crop of Japan. He suggested that provision be made for the inspection, at ports of entry, of fruits and plants received from any part of the world from which we know danger threatens.

A practical and suggestive paper was that of Hon. C. W. Garfield, of Michigan, on "Some Local Pomological Problems." The writer urged the necessity of paying more attention to local conditions in recommending varieties for planting. What succeeds in one locality may fail in another. Even on different fields of the same farm this is the case. Speaking of a case that came under his own observation, he said:

The Grand River and 6 miles of territory separate me from a colony of fruit-growers, my warm friends. We meet in council; and they insist that the Gregg is a hardy raspberry, of good quality; that the Shaffer is a poor thing, unworthy of cultivation; that the Ohio has nothing to commend it, while my immediate neighbors unite with me in combating them on every point, and widely proclaim that the Gregg is tender, the Shaffer a great success, and the Ohio a model market black cap. The dissimilar judgments are based upon conditions that are widely at variance. The Hill's Chile peach has been condemned by a whole section of our State as too poor a peach to grow, and is highly commended by another locality. Both are right. Each locality

has its peculiar conditions, affecting this variety differently. The man who asks how to make his orchard bear is given counsel by another whose conditions are as dissimilar as it is possible to make them. And still the successful man *knows* he is right and gives his advice without reservation. I would not minimize the value of our national gatherings in the interest of pomology, but the man who goes a long way from home to get advice as to what varieties to plant or how to manage them is liable to be misled. His local conditions are those to be studied, and hence the need of carefully conducted experiments in our own neighborhoods.

Other interesting papers under this head were:

Cross Fertilization, Chancellor C. E. Bessey, University of Nebraska, Lincoln, Nebr.; Immediate Effects of Cross Fertilization as Affecting Quality and Commercial Value of Citrus Fruits, Rev. Lyman Phelps, Sanford Fla.; Fruit Districts, Geologically and Climatically Considered, Prof. E. S. Goff, Experiment Station, Madison, Wis.; Heredity and Environment in Originating New Fruits, Prof. Thomas Meehan, Germantown, Pa.; Horticulture at the Experiment Stations, Prof. J. S. Newman, Auburn, Ala.; Pear Blight and Climate Influences, G. F. B. Leighton, Norfolk, Va.; Physiological Effects of Pruning, Prof. L. R. Taft, Agricultural College, Mich.; Section *vs.* Whole Roots in Propagating the Apple, Prof. J. L. Budd.

COMMERCIAL POMOLOGY.

Mr. J. H. Hale, in an address on "How to Make Small Fruit Culture Pay," laid much stress on thorough preparation of the soil, asserting that while different soils need different treatment, thorough preparation whether in drainage, fertilizing, or tillage, or in all of these, will be found profitable. In his experience in Connecticut he had found potash and phosphoric acid to be the plant foods most needed. Wood ashes or cotton-hull ashes give the best form of potash. He uses 200 bushels of wood ashes with a ton and a half of fine ground bone per acre. As a rule, but little nitrogen is needed, as it increases the tendency to grow foliage. Some varieties will be benefited by an application of nitrogen, however—as, for example, the Marlboro raspberry—on soil where Golden Queen and Cuthbert do not need it. The Marlboro is a feeble grower and needs strengthening. Hill culture is preferred to matted rows for all small fruits. To secure large, bright, and firm fruit, raspberry hills should not be closer than 6 feet, and for strong growers like Cuthbert, 7 or even 8 feet is better. Irrigation is profitable in strawberry growing, where it is at all possible. In many cases it prevents crop failures that would otherwise occur. Marketing demands much thought and study. It pays the grower to study the methods of packing to be seen in the fruit that comes to his market. Fruit of a uniform grade, nicely put up, and marked with the grower's name and address, is sure of a market. The eye of the buyer must be caught and his attention held by the superior quality and packing of the fruit. The grower's name should have a positive value in the market as the result of his persistent adherence to the policy of sending out only good fruit. The home is, after all, the best market for the American fruit-grower. Farmers, and even orchardists, have too little of small fruit on their tables. Half a bushel of fruit per day the year round can be profitably disposed of by the average family. A Connecticut farmer kept an account of the small fruit grown on half an acre of ground and used by his family last year. He charged the family with the fruit at market rates and found it amounted to \$365, or more than \$700 per acre. Such small-fruit culture pays, not only in the money value of the product, but in the healthful outdoor habits of life which it encourages, and the hundred other ways in which a garden ministers to mental and physical health.

Mr. J. T. Lovett discussed "New and Promising Small Fruits." Among strawberries Cloud (imp.) was recommended to the Southern grower for shipment North. Michel was considered valuable on account of

extreme earliness, and Lovett's Early worthy of mention. Other strawberries were characterized as follows: Lady Rusk (imp.), plant of moderate growth, evidently requiring deep, rich soil; Jucunda Improved, a strong and vigorous grower even upon sandy loam, fruit in all respects resembling closely its illustrious parent; Crawford, excellent for exhibition purposes, but demanding high culture and heavy soil; Yale, resembling Crawford, fruit firmer but not so large; Louise, fine for the amateur, but requiring high culture; Edgar Queen (imp.), resembling Sharpless, but more productive and ripening fruit better; Eureka (imp.), of the Sharpless type, more productive but not so large; Mrs. Cleveland (imp.), very vigorous and productive, but fruit of light color, quite soft, and medium size; Waldron (imp.), has few equals in size and productiveness, but lacks firmness; Viola, apparently identical with Monarch of the West; Iowa Beauty, without exception the most beautiful strawberry he had yet grown, but how well it will succeed generally is not yet determined; Parker Earle, the most promising variety for general culture that has recently appeared, productive, large, of good quality, in firmness to be classed with Sharpless; Gandy, the latest to ripen, is large, firm, and excellent, but requires high culture. The first three varieties are early, the last one late; the others ripen at mid season.

Of the black raspberries, Kansas and Lovett were mentioned as being early; Progress and Older as promising for second ripening, and Palmer, Cromwell, and Carman as closely resembling Souhegan. The only new red raspberry mentioned, Thompson's Early Prolific, was highly praised. Child's Japanese Wineberry, cane of strong growth and ornamental fruit, ripens at close of raspberry season, is attractive in appearance, but too soft for transportation, and too sour for most people.

Of blackberries, Early King seemed to Mr. Lovett to possess much merit as an early sort, especially for the home garden. Others were mentioned as follows: Thompson's (Early Mammoth), evidently a seedling of Wilson's Early, and very like it in many ways; Minnewaski, the best substitute for Kittatinny, ripening ten days after Wilson; Lovett's Best, taking all things into consideration, the most promising of the new varieties; Child's Everbearing Tree Blackberry, or Topsy, apparently a hybrid between *Rubus cuneifolius* and *Rubus villosus*, retaining the stout upright cane and villainous spines of the former and the large fruit of the latter, productive, late, large, soft, of good though not high quality, and not hardy.

Of currants, Mr. Lovett had found Fay (prolific) a success. He thought North Star to promise well, but not yet sufficiently tested; Black Champion, an improvement upon the old Black Naples, having berries larger and more productive; Crandall, to have some merit for culinary purposes, and to make a good jelly.

The gooseberry industry has not been successful with Mr. Lovett, the plant having lost its leaves prematurely and failed to ripen its fruit.

Dwarf Juneberries were reported to have given considerable satisfaction at the East, the chief complaints being lack of productiveness and susceptibility to fungous attacks. The variety "Success" is best, but is better for canning, etc., than as a dessert fruit. *Eleagnus longipes* was mentioned as an interesting fruit. It is very productive; its fruit is about three-fourths of an inch long by one-half an inch in diameter, tender and juicy, with one long, shapely, pointed seed in each berry, but too acid for dessert. It is a substitute for the cranberry.

Other papers under this head were: "Apple Growing Commercially Considered," Hon. F. Wellhouse, Fairmount, Kans.; "Commercial Peach-

growing," J. F. Taylor, Douglas, Mich.; "Berry Culture, Profits, and Failures in Georgia," Dr. Samuel Hape, Atlanta, Ga.

MISCELLANEOUS.

Concerning "Results of Recent Experiments With Small Fruits," Mr. T. T. Lyon stated that the great mass of recent originations among strawberries have been accidental seedlings.

So pronounced is the popular preference for size and color that quality seems to have been almost if not wholly overlooked, till, as a rule, its importance may be said to hold but an inverse proportion to size in the varieties of to-day as compared with the primitive type. That the pistillate varieties are so notably abundant to-day, and so obviously increasing in number, may be reasonably attributed to the objectionable though very convenient and common practice of employing pistillates in the process of reproduction from seed—a result in accordance with the universal law of nature, that like may be expected to produce like.

Of the raspberries, of the *Idæus* and *strigosus* types, Cuthbert, Golden Queen, Hestine, and Roder are among the best. Blackcaps vary but little as yet, perhaps because of their very recent introduction to cultivation. Certain varieties, such as Purple Cane, Shaffer, and a few others, possess so many characteristics in common with the blackcaps as to indicate a possible hybridization, and, if so, pointing to at least the possibility of even greater improvement in the same direction.

Among blackberries, but few, if any, of the improved varieties compare favorably with the wild product in regard to quality. Size and productiveness have been increased. White, light-colored, and spineless varieties have from time to time been brought to public notice, but so far few, if any such, have proved valuable, indicating at least a possibility that these variations may be due to lack of constitutional health or vigor. No variety has so far shown absolute hardness in the open ground, and it may fairly be deemed improbable that such condition can ever be realized.

None of the recent introductions among currants surpass, if indeed they equal, in real value the oldest varieties upon our lists. The chief alleged improvement, and that a very slight one, is increased size of fruit. A supposed hybrid between the cherry currant and the wild yellow-flowering currant of the West has recently been introduced, with no apparent evidence of such hybridization, either in the account of its origin or the characteristics of either its plant or fruit. The fruit, when cooked, is sprightly and rich in flavor, and would be eminently desirable for such purpose but for the exceeding thickness and toughness of the skin. Neither the plant nor its fruit is, so far, attacked by either insects or fungi; hence the variety may be found useful, if only as the basis for further improvement. Among gooseberries, Houghton is scarcely exceeded, except in size, by Downing and Smith, which, though reported to be natives, possess certain characteristics indicative of at least partial foreign origin. Industry and several other foreign varieties, reported to be less subject to mildew than most other foreigners, are apparently only tolerable in this respect under specially favorable conditions. The increased popular demand for this fruit has apparently drawn into public notice several novelties, some of foreign origin and others of at least partial native parentage, nearly all of which have yet to establish a reputation.

Several alleged varieties of the wild Service Berry which grows in our Northern States have been recently introduced, but they can scarcely yet be said to have passed the experimental stage. Plantings have, so far, been generally of limited extent. The fruit, which ripens somewhat in succession, proves so specially attractive to the birds that its value, when planted more extensively, can scarcely be determined.

None of the species of *Vaccinium* seem to have been successfully subjected to either garden or field culture, though occasional alleged successes are reported. Apparently the most promising species for such purpose is the swamp blue-berry (*V. corymbosum*). Success has been reported (we think from New Hampshire) with one of the others (probably *V. Canadense*) in field culture, by burning over the ground to destroy other growths, and thus securing a crop of this fruit after a subsequent growth of one year.

Hon. D. W. Adams, of Tangerine, Fla., in a paper on "Pruning for Citrus and Other Fruits for Florida," took the ground that the first and inevitable result of cutting any tree is to do it a direct and irreparable injury; that pruning either root or top destroys existing balance and makes necessary a readjustment of the functions of the roots and foliage, causing a suspension of growth, and as a final result a smaller tree than if it had gone unpruned. Pruning for growth he characterized as absurd. He added:

Some prune to make trees bear well. There is no doubt it does make them bear, for it is an accepted fact that anything which threatens the vitality of a plant causes it to make an effort to reproduce its kind. The only reason, then, why pruning does make a tree bear is because it threatens its vitality. We complain loudly of the rapid increase of those hostile insects and dangerous diseases which now attack our trees and plants. In my opinion, the prevalence of both is due almost wholly to the low vitality and disarranged circulation caused by our defiance of the laws of nature. In attempting to improve upon nature we have got so far removed from her that, continually thwarted, she is unable in her own chosen and proper way to control these diseases and insects. So the duty devolves upon us—with what success, satisfaction, and profit, each can answer for himself.

Mr. Mortimer Whitehead, special agent in charge of Division of Agriculture "B," of the Eleventh Census, in a paper on "Pomology in the Eleventh Census," presented some startling preliminary figures concerning the magnitude of the fruit-growing interest of the country.

The viticultural interest was found to cover 401,261 acres of vines, of which 307,575 acres were in bearing, producing 572,139 tons of grapes. It would require about 60,000 railroad cars to move the commercial crop of grapes in 1889. The industry represented an investment of \$155,661,150, and furnished employment to 200,780 persons. The vines are now growing that will within three years produce a crop of 8,000,000 to 10,000,000 boxes of raisins. This is more than the present entire consumption of the country, which is about 7,500,000 boxes annually.

The peach acreage in the United States was found to be 507,736; value of produce, \$76,160,400; hands employed, 226,000. Upward of \$90,000,000 was found invested in peach-growing in the census year.

Concerning the nursery interest, it was found that a capital of \$52,425,669.51 is invested; 172,206 acres of land are used, and the grand total of young trees in nurseries in 1889 was 3,386,855,778. Of these, 518,016,612 are fruit trees, 685,603,396 grape vines and small fruits, and the balance nut, deciduous, and evergreen trees, hardy shrubs, and roses.

The writer stated that in the final compilation of the completed census the investment in horticultural pursuits will be shown to be more than \$1,000,000,000.

For various reasons the writer urged that in the future collection of statistics everything pertaining to agriculture, including its census, should be under the control of the Secretary of Agriculture.

Other papers, either read or ordered printed in the report of the society, included—

Does the Spraying of Orchards with Insecticides Pay? Prof. C. M. Weed, College of Agriculture, Hanover, N. H.

General Fruit Growing, G. C. Brackett, Lawrence, Kans.

Fruit Notes from a Canadian Standpoint, L. Woolverton, Grimsby, Ont.

Novelties in Pomology, H. E. Van Deman, U. S. Department of Agriculture.

Pomological Resources of North Carolina, Prof. W. F. Massey, College of Agriculture, Raleigh, N. C.

Small Fruit Growing in Eastern and Middle North Carolina, J. Van Lindley, Pomona, N. C.

The Grapes of Middle Virginia, Hon. Henry L. Lyman, Charlottesville, Va.

Fruits of Western North Carolina, H. S. Williams, Rockledge, Fla.

The Revised Nomenclature of Japanese Fruits, L. A. Berckmans, Augusta, Ga.

These papers, together with the discussions on them and the fruit catalogue of the society, will be found in the report of the society for the session of 1891.

The fruit exhibit, while not so large as at some former sessions of the society, was a creditable one. Specimens of a number of the newer varieties, as well as typical specimens of standard sorts, were donated by the exhibitors to the Division of Pomology. Wax models have been made of many of these for the working collection of the division.

